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09/470,685	12/23/1999	DAVID A. HUGHES	081862.P101	6470

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EXAMINER

NGUYEN, HANH N

ART UNIT	PAPER NUMBER
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2662

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/470,685

Applicant(s)

HUGHES, DAVID A.

Examiner

Hanh Nguyen

Art Unit

2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed on 11/21/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-81 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18, 20-44 and 46-81 is/are rejected.
- 7) ☒ Claim(s) 19 and 45 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 5, 20, 21, 32, 33, 35, 46-51, 58-61, 68, 69 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hamami** (US Pat. No. 5,959,972) in view of **Vallee et al.** (US Pat. No. 5,608,733).

In claims 1, 32, 46, 47, 68 and 78, **Hamami** discloses, in Fig.2, an ATM system (a system) comprising a main communication link 60 and a backup link 62 (a plurality of links in the network). An ATM switch 1 (a transmitter switch) is coupled to ports 34, 36 of links 60, 62 respectively (a first end of each link) for transmitting cells to an ATM switch 2. The ATM switch 2 (a receiver switch) is coupled to ports 42, 44 of the links 60, 62 respectively (a second end of each link). See col.5, lines 7-20. Traffic is directed to main link port 34 is duplicated to backup link port 36 by using point to multipoint connection or multicast capability of the ATM switch (transmitting duplicated data along each link). See col.6, lines 1-15. When a failure occurs on the main link 60, the traffic originally traveling over the main link is switched to the backup link 62 (data transmitted along one link is switched to another link when a failure is detected on one link). See col.4, lines 42-47. **Hamami** does not disclose the transmitting switch transmitting distinct data along each link of plurality of links to the receiving switch. **Vallee et al.** discloses,

in Fig.8, transmitting node 20 transmitting different ATM cells (distinct data) over links 24 respectively (along each link) to a receiving node 26 (transmitting distinct data along each link of plurality of links to the receiving switch). See col.5, line 60 to col.6, line 5. Therefore, it would have been obvious to one ordinary skill in the art to modify the **Hamami** by transmitting distinct ATM cells along each of links 60, 62. The motivation is to transmit distinct data along each link and switch data on one failed link to another at the same time without using backup link.

In claims 2, 33 and 69, the limitations of these claims have been addressed in claims 1, 32 and 68 above.

In claims 4 and 20, **Hamami** discloses, in Fig.2, the switch 1 further comprises separate port interface cards (transmitter line cards). Each port interface card (each transmitter line card) is coupled to each ports 34, 36 respectively of links 60, 62 respectively (transmitter switch comprising a line card coupled to the first end of each link). See col.4, lines 60-67.

In claims 5, 21 and 35, the limitations of these claims have been addressed in claim 1.

In claims 48 and 58, **Hamami** discloses, in Fig.2, an ATM network comprising a switch 1 (a transmitter switch). Switch 1 has a first port interface card (at least one input line card) at port 32 for receiving data from station 1(at least one input line card for receiving data in the network). A second port interface card at port 34 (a transmitter line card) is coupled to the first port interface card (coupled to the at least one input line card). The second port interface card is coupled to link 60 (transmitter line card is coupled to a link) See col.4, line 66 to col.5, line 4 & col.5, lines 9-12 & col.5, lines 35-50. Under normal operation, the second interface card (transmitter line card) transmits cells over link 60 (transmitting cells along one link). When a

failure occurs on link 60, cells traffic is switched to link 62 (switching the cells to another link when a failure is detected on the link). See col.5, lines 47-57.

In claims 49 and 59, the limitations of these claims have been addressed in claim 2.

In claims 50 and 60, the limitations of these claims have been addressed in claim 3.

In claims 51 and 61, the limitations of these claims have been addressed in claim 6.

Claims 6-10, 12-15, 22-26, 28-31, 36-43, 52-55, 57, 62-67, 71-77, 79, 80 and 81 are rejected under 35 USC 103(a) as being unpatentable over **Hamami** (US Pat. No. 5,959,972) in view of **Vallee et al.** (US Pat. No. 5,608,733), and further in view **Oba et al.** (US Pat. No. 6,262,986 B1).

In claims 6, 22 and 81, **Hamami** does not disclose transmitter classifier module classifies a link on which the cells is transmitted; a plurality of queuing buffers storing received packets; transmitter multiplexing module coupled to each buffer queue and to each link; and directing cells stored in each buffer in a predetermined order.

Oba et al. discloses, in Fig.1, a scheduling unit 16 (transmitter classifier module) that assigns (classifies) a virtual connection on which the packet is transmitted (transmitter classifier module classifies a link on which the cells is transmitted). See col.17, lines 35-45. Fig.1 shows packet queues 12, 13, 14 (a plurality of queuing buffers) that store received packets (storing received packets). See col.4, lines 65 to col.5, line 5. A packet output unit 17 (transmitter multiplexing module) is coupled to each packet queue and link 20 (coupled to each buffer queue and to each link). A scheduling management unit 16 schedules information which specifies an

order to read out packets 18 stored in packet queues 12-14 (directing cells stored in each buffer in a predetermined order). See col.5, lines 1-15 & col.5, lines 35-40.

Therefore, it would have been obvious to add the packet scheduling of **Oba et al.** into the switch of **Hamami** so that cells is assigned into an appropriate queue for transmitting into links. The advantage is to store cells in packet buffer and assign cells into a backup link when a primary is failed.

In claims 7, 23, 36, 52, 62, 71 and 79, **Hamami** virtual circuit 68 established over main link 60 between switch 1 and switch 2. See col.5, lines 40-45. **Hamami** does not disclose the transmitter switch receives a virtual connection setup request and assigns at least one virtual connection corresponding to the VC request to each buffer. **Oba et al.** discloses virtual connection with requested bandwidth is received at packet input unit 15 (transmitter switch receives a virtual connection setup request). The packet input unit 15 then enters packets that are corresponding to different virtual connections into an appropriate one of packet queues 12-14 according to a header information of the packet (assigns at least one virtual connection corresponding to the VC request to each buffer). See col.5, lines 18-35. Therefore, it would have been obvious to modify **Hamami** by adding packet queues of **Oba et al.** into the transmitter switch of **Hamami**. So that packets with different VC can be allocated.

In claims 8, 24, 37, 53, 63 and 72, the limitations of these claims have been addressed in claim 1.

In claims 9, 25, 38, 54, 64, 73 and 80, **Hamami** does not disclose assigning VC to each buffer in such a way so as to ensure that each link has a balance load. **Oba et al.** discloses each VC corresponding to a packet queue is assigned in accordance with the queue length)

(assigning VC to each buffer in such a way so as to ensure that each link has a balance load).

See col.5, lines 40-47.

In claims 10, 26, 55 and 65, the limitations of these claims have been addressed in claims 6 and 9.

In claims 12, 28, 42, 57 and 67, **Hamami** discloses a controller 38 that monitors the switching of a link when one link breaks (monitoring the switching each of the links when one link fails). See col.5, lines 20-27.

In claims 13 and 29, the limitations of these claims have been addressed in claim 1.

In claims 14, 30 and 43, the limitations of these claims have been addressed in claim 6.

In claims 15 and 31, **Hamami** discloses switch 2 comprising a controller 46 (a receiver processor) that monitors links in case of one link fails. See col.5, lines 20-27.

In claims 39 and 74, the limitations of these claims have been addressed in claim 6.

In claims 40 and 75, the limitations of these claims have been addressed in claim 6.

In claims 41 and 76, the limitations of these claims have been addressed in claim 9.

In claim 77, the limitation of this claim has been addressed in claim 12.

Claims 11, 27, 56 and 66 are rejected under 35 USC 103(a) as being unpatentable over **Hamami** (US Pat. No. 5,959,972), in view of **Vallee et al.** (US Pat. No. 5,608,733), in view of **Oba et al.** (US Pat. No. 6,262,986 B1), and further in view of **Graham et al.** (US Pat. No. 6,097,722).

In claims 11, 27, 56 and 66, **Hamami** does not disclose queuing buffers include QOS queues. **Oba et al.** discloses packet queues 12-14 **Graham et al.** discloses connection requests

that specifies QOS between ATM switches. Therefore, it would have been obvious to implement the packet queues of **Hamami** with QOS so that a virtual connection request can be satisfied with a QOS expectation.

Claims 18 and 44 are rejected under 35 USC 103(a) as being unpatentable over **Hamami** (US Pat. No. 5,959,972) in view of **Vallee et al.** (US Pat. No. 5,608,733), and further in view of **Graham et al.** (US Pat. No. 6,097,722).

In claims 18 and 44, **Hamami** does not disclose each link includes a guaranteed bandwidth. **Graham et al.** discloses, in Fig.8, a Centralized Call Control (CAC) allocates virtual channel with a guaranteed bandwidth as specified in a contract to user (each link includes a guaranteed bandwidth). See col.7, lines 50-62. Therefore, it would have been obvious to modify the **Hamami** by using the CAC of **Graham et al.** to assign guaranteed bandwidth to links connecting users.

Claims 3, 34 and 70 are rejected under 35 USC 103(a) as being unpatentable over **Hamami** (US Pat. No. 5,959,972) in view of **Vallee et al.** (US Pat. No. 5,608,733) and further in view of **Hassell et al.** (US Pat. No. 6,356,622 B1).

In claims 3, 34 and 70, **Hamami** does not disclose the network is a Frame Relay network. **Hassell et al.** discloses, in Fig.1, a frame relay network 16 used to connect a primary link 18 between node 12 and node 14 (the network is a Frame Relay network). See col.4, lines 25-40. Therefore, it would have been obvious to replace the ATM network of **Hamami** by the

Frame Relay network of **Hassell et al.** so that variable length cells can be transmitted from the transmitter switch to the receiver switch.

Claims 16 and 17 are rejected under 35 USC 103(a) as being unpatentable over **Hamami** (US Pat. No. 5,959,972) in view of **Vallee et al.** (US Pat. No. 5,608,733), and further in view of the **Admitted Prior Art**.

In claims 16 and 17, **Hamami** discloses an ATM system comprises ATM switches 1 and 2 transmitting and receiving cells via links 60, 62 respectively. **Hamami** does not disclose the cells comprising header having VCI/VPI. The admitted prior art discloses on page 1, lines 20-25 that each cell comprising a header having VCI/VPI for identifying an ATM connection (a link) of that particular cell. Therefore, it would have been obvious for one skills in the art to conclude that ATM cells comprises header with VCI/VPI attached in order to identify the connection for that particular cell.

Allowable Subject Matter

Claims 19 and 45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In claims 19 and 45, the prior art does not disclose the total bandwidth of each link is greater than a sum of guaranteed bandwidth provided by any two links of the plurality of links.

Response to Arguments

Applicant's arguments with respect to claims 1-18, 20-44, and 46-81 have been considered but are moot in view of the new ground(s) of rejection.

Note: In claims 1, 32, 46, 47 and 68, the claimed limitations do not address that the transmitter switch transmitting distinct data along each link **at the same time** as stated by Applicant on page 18 in the response. Therefore, examiner believes that **Hamami and Vallee et al.** overcome the claimed limitations.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rochberger et al. (US Pat. No. 6,272,107 B1) discloses Method of path Restoration in an ATM network Utilizing Point to Point Switched Virtual Circuit.

Wikinson et al. (US Pat. No. 5,452,293) discloses Apparatus and Method of Transmitting Call Information Prior to Establishing a Connection Path.

Calvignac et al. (US Pat. No. 5,629,928) discloses Dynamic Fair Queuing to Support Best Effort Traffic in an ATM Network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Nguyen whose telephone number is 703 306-5445. The examiner can normally be reached on Monday-Friday 8:00 AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703 306-4744. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703 305-3988 for regular communications and 703 308-9051 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4700.

Hanh Nguyen



February 6, 2004